

WHAT IS CLAIMED IS:

1. A gas wiping apparatus comprising:

face gas wiping nozzles extending widthwise of a strip material lifted from a liquid bath and caused to travel continuously upwardly along a jet treatment path, said strip having front and back surfaces and side edges, said strip carrying bath liquid on its surfaces by pickup from said bath,

said face gas wiping nozzles being adjacent to said jet treatment path and being directed to jet gases onto said front and back surfaces of said strip material, and being aimed at an impingement area on said front and back surfaces of said strip material, thereby limiting the pickup of said bath liquid carried by said front and back surfaces of said strip material;

a pair of baffle plates spaced from said edges of said strip material and in a position adjacent to said gas impingement area; said baffle plates having a clearance C, from said edges of said strip material; and

edge wiping nozzles disposed between each of said baffle plates at its inner edge and adjacent an edge of said strip material, each said edge wiping nozzle being provided with an edge wiping gas jet port positioned adjacent said

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gas impingement area, each said edge wiping nozzle being positioned for jetting a gas in a widthwise direction relative to said strip material and substantially parallel to each adjacent edge of said strip material;

wherein said clearance C between said edge of said strip material and said inner edge of said baffle plate is within the range from 4 to 7 mm; and

when the distance measured along the lifting movement of said strip material between said gas jet port of said edge wiping nozzle and said gas impingement point of said face wiping jet is expressed as L (mm), the relationship between said dimension L and said clearance C (mm) satisfies the following equation:

$$-2.0C + 20 \leq L \leq -2.5C + 45.$$

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2. A gas wiping apparatus according to Claim 1, wherein said edge wiping nozzle is integrally fixed to said baffle plate.

3. A gas wiping apparatus according to Claim 1 or 2, further comprising:

drive means for driving either one or both of said baffle plate and said edge wiping nozzle such that the same are adjustably movable toward and away from said strip

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material.

4. A gas wiping apparatus according to Claim 3,
further comprising:

control means for controlling said drive means to
maintain in a preset range the clearance between either one
5 or both of said baffle plate and said edge wiping nozzle,
and said edge of said strip material.

5. Gas wiping apparatus for wiping a moving metal
strip having two opposed faces and two opposed edges,
comprising:

(a) slit jet gas nozzles adjacent to and aimed at both
of said opposed faces at a designated area on said metal
strip,

(b) edge jet nozzles aimed at and adjacent to both said
opposed edges, and

(c) a pair of spaced-apart baffle plates adjacent each
10 of said edge jet nozzles, and spaced from an adjacent edge
of said strip,

wherein said edge jet nozzles are spaced, along the
path of travel of said moving metal strip, from said
designated area by a distance L, and

15 wherein said jet nozzles are each spaced from the

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adjacent edge of said metal strip at a distance C which is 4 to 7 mm,

and wherein the relationship between said distances L and C in millimeters satisfies the equation

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$$-2.0C + 20 \leq L \leq -2.5C + 45.$$

6. The apparatus defined in Claim 5, wherein when C is 7, L is 6-27.5 and when C is 4, L is 12-35.

7. A method of gas wiping a plating material from metallic strip lifted from a liquid plating bath and caused to travel continuously upwardly along a jet treatment path, comprising:

impinging gases from face gas wiping nozzles extending widthwise of a strip material, said strip having front and back surfaces and side edges, said strip carrying bath liquid on its surfaces by pickup from said bath,

arranging said face gas wiping nozzles adjacent to said jet treatment path and directing said gas in a direction to impinge gases onto said front and back surfaces of said strip material, and aiming said gases at an impingement area on said front and back surfaces of said strip material, thereby limiting the pickup of said bath liquid carried by said front and back surfaces of said strip material;

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arranging a pair of baffle plates in a position spaced from said edges of said strip material and in a position adjacent to said gas impingement area; said baffle plates having a clearance C from said edges of said strip material; and

aiming edge wiping nozzles between each of said baffle plates at its inner edge and adjacent an edge of said strip material, each said edge wiping nozzle being provided with an edge wiping gas jet port positioned adjacent said gas impingement area,

directing each said edge wiping nozzle for jetting a gas in a widthwise direction relative to said strip material and substantially parallel to each adjacent edge of said strip material;

wherein said clearance C between said edge of said strip material and said inner edge of said baffle plate is within the range from 4 to 7 mm; and

adjusting and controlling the distance measured along the lifting movement of said strip material between said gas jet port of said edge wiping nozzle and said gas impingement point of said face wiping jet so that when it is expressed as L (mm), the relationship between said dimension L and said clearance C (mm) satisfies the following equation:

$$-2.0C + 20 \leq L \leq -2.5C + 45.$$

8. A gas wiping method according to Claim 7, comprising affixing said edge wiping nozzle integrally to said baffle plate.

9. A gas wiping method according to Claim 7, further comprising:

driving either one or both of said baffle plate and said edge wiping nozzle such that the same are adjustably moved toward and away from said strip material.

10. A gas wiping method according to Claim 9, further comprising:

controlling said drive means to maintain in a preset range the clearance between either one or both of said baffle plate and said edge wiping nozzle, and said edge of said strip material.

11. Gas wiping method for wiping a moving metal strip having two opposed faces and two opposed edges, comprising:

(a) aiming slit jet gas nozzles adjacent to and aimed at both of said opposed faces at a designated area on said metal strip,

(b) aiming edge jet nozzles at and adjacent to both

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said opposed edges, and

(c) baffling with a pair of spaced-apart baffle plates adjacent each of said edge jet nozzles, and spaced from an adjacent edge of said strip,

adjusting said edge jet nozzles so that they are spaced, along the path of travel of said moving metal strip, from said designated area by a distance L, and

spacing said jet nozzles from the adjacent edge of said metal strip at a distance C which is 4 to 7 mm,

and controlling the relationship between said distances L and C in millimeters to satisfy the equation

$$-2.0C + 20 \leq L \leq -2.5C + 45.$$

12. The method defined in Claim 11, wherein when C is 7, L is 6-27.5 and when C is 4, L is 12-35.

13. The method defined in Claim 7 wherein said metal is selected from the group consisting of zinc, aluminum and alloys thereof.

14. The method defined in Claim 7 wherein said liquid plating bath comprises zinc.